NEWSLETTER

SUMMER ISSUE
EDITION 1, VOL.1

Welcome to the fist GEMINI Newsletter, in which we introduce the project, update you on recent meetings, workshops and upcoming events.

GEMINI is funded within the HORIZON-HLTH-2023-TOOL-05-03 call - Integrated, multi-scale computational models of patient patho-physiology ('virtual twins') for personalized disease management and officially started December 1st 2023.

Since the start, we have had already two project meetings and spread the word of GEMINI across the globe! If you want to be part of the journey, follow us on our social media and subscribe to our newsletter.

A big thank you to all GEMINI partners and friends.

Enjoy the read!

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What is a digital twin?

The term digital twin is used in many contexts and with many different interpretations. We follow the definition of Edith: A digital twin in healthcare is a computational simulation that predicts "quantities of interest" supporting decision-making within a specific "context of use" in healthcare.

There are 3 levels of digital twins in healthcare

- Generic: A predicted value is within the range of the values measured experimentally in a reference population
- Population-specific: A predicted value is sufficiently close to some central property (e.g., mean, median) of the range of the values measured experimentally in the reference population.
- subject-specific: A predicted value is sufficiently close to the value measured experimentally in each individual in the reference population

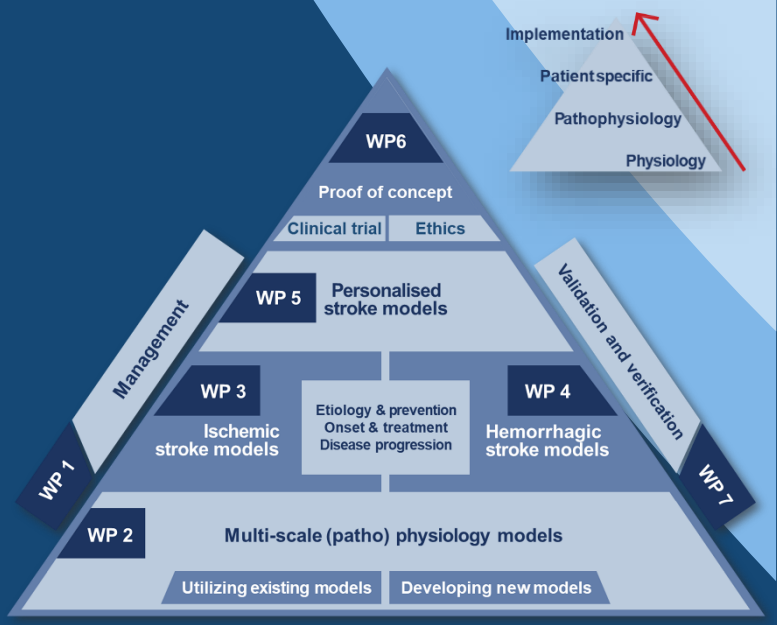
The introduction of Digital Twins in Healthcare for stroke opens up unmet opportunities to improve treatment, management, and trial design involving stroke patients.

GEMINI brings together a consortium of 21 organizations from 14 countries including computer science institutions, hospitals, large industry, and small and medium enterprises.

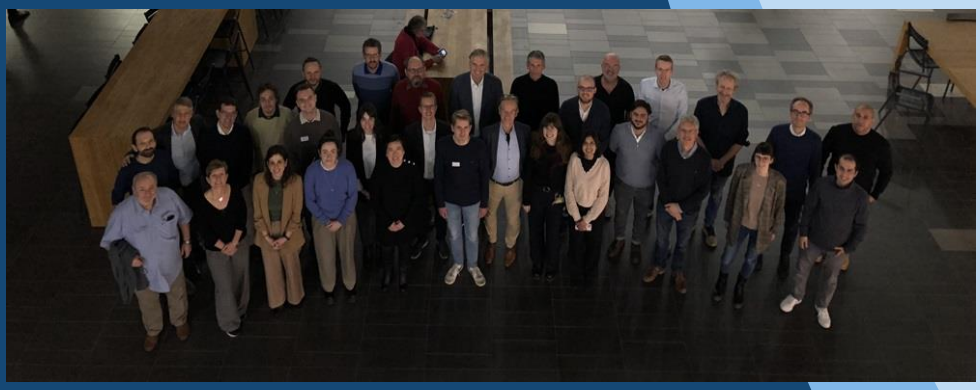
Digital Twins in Healthcare represent patients by integrating all information for this specific patient. This allows the simulation of (new) treatments giving valuable insight into patient-specific treatment selection and illustrating potential complications such as thrombus fragmentation during thrombectomy.

Gemini will address a large scale of aspects of stroke from fundamental physiological cascade initiated with the onset of stroke up to the patient-specific functional deterioration after a treated stroke.

GEMINI Work breakdown:



GEMINI is funded by the European Union's Horizon Europe research and innovation program, grant number 101136438



January 2024, we had our Kick-off meeting hosted by the Amsterdam University medical centers, The Netherlands. All partners introduced themselves and their planned work and we set the basis for the collaboration. During the kick-off we also generated three videos on GEMINI. Click below to watch.

Alfons Hoekstra, Professor of Computational Science & Engineering from the University of Amsterdam explains what a Digitial Twin in Health is and what kind of DTHs will be delivered in GEMINI.

Charles Majoie, Professor of Neuroradiology of the Amsterdam UMC discusses the current status of treatment of patients with acute ischemic stroke and how the use of DTH can contribute to the care of patients with acute ischemic stroke.

Prof. Philippe Bijlenga, Neurosurgeon in the Geneva University Hospital explains the issues when managing aneurysm or SAH (Sub Arachnoid Haemorrhage) that could benefit from DTH.

The start of GEMINI was also presented in many national and international Newsletters and radio and television broadcasts, click here to find out which.

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At the 10th European Stroke Organisation Conference (ESOC 2024), May 15–17th 2024 in Basel, Switzerland, a group of our GEMINI researchers organized a Clinical Forum Meeting to discuss our planned activities for a clinical trial involving digital twins in healthcare within GEMINI. As in the next 6 years, we aim to develop multi-organ digital twins that can simulate personalized stroke treatments to aid in decision making, we wanted to evaluate the value of such digital twins in clinical practice by conducting a clinical trial. The expertise and feedback of clinicians and neurosurgeons will be invaluable as we prepare for the next steps in the project. Important subjects were the Mock up creation and analysis - What do we want from a digital twin? and the clinical trial design and outcomes.

May 2024, we had our second meeting hosted by the National University of Ireland Galway. We were warmly welcomed by Professor Peter McHugh, Deputy President of Galway University. Also, our partner in Bonn, Matthias Braun, had an excellent lecture on ethics and humanities aspects of our project and the Neuravi team clarified the AI aspects for device development and the Regulatory environment. Many newly recruited PhDs and postdocs were present and presented the flying start of the project, it was an excellent meeting and will be continued in November in Milan, Italy.

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